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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION III
841 Chestnut Building
Philadelphia, Pennsylvania 19107

SUBJECT: TOXICS ASSESSMENT - NVF SITE **DATE:** 8 Oct 86

FROM: Bruce Molholt, Ph.D., Toxicologist
Delmarva/WV/DC CRES (3HW16)

TO: Harry Daw, Project Manager
CERCLA Removal Enforcement (3HW14)

I have reviewed the analysis of sediment samples taken at the NVF site. Potentially three different types of toxic materials are present in sediments at the site: PCBs, pesticides (mainly DDT) and polycyclic aromatic hydrocarbons (PAHs). Although all three types of substances are of toxicologic concern both to human health and the environment, this memo will address only PCBs, which are, as far as I can tell, the only toxins directly attributable to contamination from the NVF site.

It should be noted, however, that the biochemical properties of PCBs, DDT and PAHs are similar enough that any abatement strategy for one will suffice for all. Hence, the extant avoidance of fish from Red Clay Creek restricts the major route of human exposure not only from PCBs, but also from DDT and PAHs.

Before entailing risk from PCB contamination, it should be noted that someone, apparently in error, has tampered with the sampling analysis dated 5 June 1984 (Table 1). Typed concentrations in mg/kg (ppm) have been written over in hand to read "ug/kg=ppb." Three additional pages of tables retain the mg/kg (ppm) heading for sampling data. Obviously, for any risk analysis, it is imperative to know which of these sampling headings is correct, since they differ 1000-fold in concentration.

I believe that the mg/kg (ppm) heading, as originally denoted, is correct. This would place the PCB level at the State Street sampling location (station no. D) at 8400 ppm. (It should also be noted on a summary of these data, table 2, that someone has scratched out State Street and replaced this station with South Street.) This is in line with the 3 March 1986 sample #3 of Martel Labs which showed 11,000 ppm PCBs. Also in the Stanley to Feola memo of 12 Feb 86 swale contamination at 8400 ppm is noted.

In laboratory experiments in several strains of rats and mice PCBs are carcinogenic. Serial sacrifice of PCB-treated animals have shown oncogenic progression in livers

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from neoplastic nodules to hepatocellular adenoma to hepatocellular carcinoma. In some test animals frank cancers developed after PCB exposure at more than one organ site. Extrapolating these experimental animal results to the human, EPA has calculated that ingestion of 16 ng/d PCBs will produce one cancer per million population per lifetime.

Although no fish data are included in the package you provided me, and although a fishing advisory has been issued, for the purposes of calculating potential health risk I have made the following (reasonable) assumptions:

1) Concentrations of fish and shellfish contamination are similar to those found in sediments (8400 ppm).

2) Potential consumers would ingest an average of 6.5 g daily.

Given these conditions and fish or shellfish consumption at these levels for a lifetime, every person so exposed is at risk for cancer from this source. Even persons consuming fish or shellfish from this source for 2 years are at 100 percent risk for developing cancer.

Prohibition of fishing in the swale and downstream is obviously well-advised. If sediments can be prohibited from migrating from the contaminated swale, opportunities for downstream contamination will be minimized.

If you would like risk analyses for DDT and/or PAH contamination at the NVF site, please do not hesitate to ask.

cc: Dennis Carney